


Instructor: Dr. Leslie Suters Office: RSCC-OR; H-214 Office Phone: 481-2000 Ext. 2320 Email: lsuters@tntech.edu Office Hours: Schedule as needed	ELED 4142 – Science for the Elementary Teacher Credit - 3 semester hours Prerequisite or Co-Requisite if applicable: Full Admission to the Teacher Education Program; ELED 3152, ELED 3140, FOED 3800
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	Conceptual Framework Graphic/Statement The graduate of the teacher education program at TTU will be a competent, caring professional who can work effectively in a diverse, technological society. Candidates will demonstrate: <ul style="list-style-type: none">• an appropriate level of scholarship,• effective communication,• a level of responsibility consistent with professional behavior,• skills of reflection that promote self-evaluation and growth,• respect for diversity, and• skills of collaboration with other professionals, families, and community.
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Conceptual Framework Statement

The **knowledge element** enables professionals to

1. use strong understanding of subject matter and general knowledge to enable students to learn and communicate effectively with others, and
2. use technological knowledge and collaborative techniques to foster active inquiry, problem solving, and performance skills among learners.

The **performance element** enables professionals to

1. understand and establish an effective learning environment that possess the skills, techniques, and strategies to do so, including those that provide opportunities for student intellectual, social, and personal development, and
2. use reflection continually and improve outcomes assessment, resulting in improved learning experiences.

The **disposition element** enables professionals to

1. create a climate of openness, inquiry, and support by practicing strategies that foster relationships of acceptance, appreciation, and value for diverse individuals and groups in the larger community, and
2. recognize ethical, professional standards and strive for continual personal improvement.

Class Meetings

Wednesday 9:00-12:00 *See assignment calendar for additional details and exceptions*

There is an iLearn component to this course. elearn.tntech.edu

Catalog Description

ELED 4142 - Curricular content of elementary school science including materials and methods of developing skills in science for children.

Required Texts, Readings, and Supplies

- *What's Your Evidence? Engaging K-5 Children in Constructing Explanations in Science.* Carla L. Zembal-Saul, Katherine L. McNeill, Kimber Hershberger; Pearson 2012
- *Science Formative Assessment, Volume 1: 75 Practical Strategies for Linking Assessment, Instruction, and Learning, Edition 2;* Page Keeley; Publisher: Sage; 2015
- *Tennessee State Standards for Science:* <http://tn.gov/education/article/science-standards>
- *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* (2012). Free Download from http://www.nap.edu/catalog.php?record_id=13165 (May need to sign up for a free account).
- Spiral-Bound Graph Ruled Journal or 3-Ring Binder

Recommended Memberships

National Science Teachers Association (NSTA): Membership forms may be found at

<http://www.nsta.org/membership/join.aspx?lid=tnav>

Join online or by mail, fax, or phone. \$35 (Need to be able to document proof of current registration)

Tennessee Science Teachers' Association (TSTA): <http://www.tnsta.com/>

Attendance Policy

Due to the amount of content covered, students are required to attend each class. If a situation arises which requires you to be absent, you should notify your professor immediately. You will be expected to email or post any work that is due on the date of your absence. *It is your responsibility to schedule an appointment with the instructor in order to plan make-up work if you have an excused absence.*

Note: All absences should be supported with documentation presented to your professor upon your return to class. Please be advised that according to TTU Policy more than 3 absences can result in course failure.

Professionalism Grade

Ten percent of your course grade will be determined by your professionalism, including attendance, punctuality, and class participation. Please remember that reading assignments must be completed prior to the designated class; failure to read the assignments will affect your ability to participate in class discussions. The following points will be deducted from your professionalism grade if deemed necessary: 10 points for each absence; 5-10 points for tardiness or leaving class early (each time); up to 10 points for failure to complete readings or participate in class.

Assignment Policy

Assignments are due as described on the assignment calendar. Late assignments will not be accepted unless there are extenuating circumstances, which will be determined on a case-by-case basis. If the instructor deems it appropriate and agrees to accept a late assignment, the student will incur a late penalty of 20% of the final grade for each day it is late (including Saturday and Sunday).

Important Note: You may be asked to revise an assignment in order to help you better learn the material. The final grade for the revised assignment will be an average of the original grade and the grade earned for the revised work.

Cell Phone Etiquette

Cell phones should be turned off or on vibrate and not used during class. Only exceptions will be the use of the phone as a calculator, stopwatch, or other application for in-class work.

TTU Library Online Access

The Tennessee Tech Library is available to all candidates enrolled at TTU. Links to the library materials (such as electronic journals, databases, interlibrary loans, digital reserves, dictionaries, encyclopedias, maps, and librarian support) and Internet resources are available to complete assignments. To access the online databases, use your TTU PC Lab username and password. If you do not know your TTU username and password see the following: <https://www.tntech.edu/its/password.htm>.

More information on electronic media is available at the TTU Library <http://www.tntech.edu/library/>.

Copyright and Fair Use

All projects created in this course should follow appropriate copyright and fair use guidelines. Additional information is available at: <http://www.utsystem.edu/ogc/intellectualproperty/cprtindx.htm>

Please note: TTU personnel may display your work created during the scope of this course during accreditation, conference presentations, workshops, and/or future classes.

TTU Office of Disability Service

Candidates with a disability requiring special accommodations should contact the Office of Disability Services (ODS). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The TTU Office of Disabilities is located in the Roaden University Center (RUC), Room 112; Phone 931-372-6119. For additional information see

<http://www.tntech.edu/disability/>

Pandemic Plan

Should normal classroom activities at your placement be disrupted by a pandemic outbreak, the format for this course may be modified to enable completion. In that event, new instructions for the continuation of the course will be provided (Source: TTU University Faculty Meeting, August 25, 2009).

TTU Plagiarism Policy

When you use (for example, quote or even summarize or paraphrase) someone else's media, words, data, ideas, or other works, you must cite your source. You should be especially careful to avoid plagiarizing Internet sources (for example, e-mail, chat rooms, Web sites, or discussion groups). It does not matter whether you borrow material from print sources, from the Internet, from on-line databases, or from interviews. Failure to cite your source is plagiarism. Students who plagiarize may receive an "F" or a "0" for the assignment, or an "F" for the course. <http://www.tntech.edu/ttustudenthandbook/academic-regulations/>

Tk20 at TTU

TTU's College of Education uses Tk20, a comprehensive data and reporting system to improve our processes, manage candidate transition points, and track key assessments in program coursework. All students, regardless of affiliated major and college, enrolled in courses requiring Tk20 must purchase an account and submit the appropriate coursework. Failure to purchase Tk20 can result in a zero for Tk20 assignments and/or final course grade reduced a full letter. The one-time-only system cost is \$133.33 at the university bookstore, and your account is valid for seven years. You will be asked to access Tk20 for a variety of tasks, including coursework, advisement, field/clinical experiences, portfolios, and key program assessments. See our website for more details: <https://tntech.tk20.com>

Major Teaching Methods

Lecture, demonstration, discussion, reading assignments, written assignments, group and individual projects and presentations.

Topics To Be Covered

State and National Standards, Curriculum and Assessment, Preparation of Unit and Lesson Plans, Pedagogical Content Knowledge, Classroom Management Skills, Instructional Strategies (Focus on Differentiated Instruction & Formative Assessment), Constructivism & Inquiry-based learning; Resources, Professional Development

Course Objectives & Assignments

Upon completion of this course, the student should be able to:

Objective 1	Demonstrate implementation of K-6 State Standards through planning engaging lessons, focusing on both content and process standards.
Standard	(TPE Standards 1, 2, 3, 4, 5, 6, 7, 8)
Assignment(s)	Science Box, 5E Lesson Plan & Demonstration Lesson, Inquiry Project, 3D Printing PBL, NSTA Learning Center, Paired Text Set
Assessment	Gradesheets provided
Praxis test/topic (if applicable)	ELED: CIA (Science Curriculum, Instruction, and Assessment); Content: (Science); PLT K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 2	Become familiar with constructivism and scientific inquiry.
Standard	(TPE Standards 1, 2, 3, 4, 5, 6, 7, 8, 9)
Assignment(s)	Learning Log, Science Box, 5E Lesson Plan & Demonstration Lesson, Inquiry Project, 3D Printing PBL, Project WILD & PLT workshop
Assessment	Gradesheets provided
Praxis test/topic (if applicable)	ELED: CIA (Science Curriculum, Instruction, and Assessment); Content: (Science); PLT K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 3	Promote mutual respect in interpersonal and group relationships through science-related experiences.
Standard	(TPE Standards 2, 3, 4, 5, 6, 7)
Assignment(s)	Science Box, 5E Lesson Plan & Demonstration Lesson, Inquiry Project, 3D Printing PBL, Project WILD & PLT workshop
Assessment	Gradesheets provided
Praxis test/topic (if applicable)	PLT K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 4	Develop science activities that are supportive of and engage the learners in an active, problem-solving, hands-on approach.
Standard	(TPE Standards 1, 2, 3, 4, 5, 6, 7, 8, 11a)
Assignment(s)	Learning Log, Science Box, 5E Lesson Plan & Demonstration Lesson, Inquiry Project, 3D Printing PBL, Project WILD & PLT workshop
Assessment	Gradesheets provided
Praxis test/topic (if applicable)	ELED: CIA (Science Curriculum, Instruction, and Assessment); Content: (Science); PLT K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 5	Develop a more positive attitude and disposition toward teaching science in the elementary grades.
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Standard	(TPE Standards 1, 2, 3, 4, 5, 6, 7, 9)
Assignment(s)	Learning Log, 5E Lesson Plan & Demonstration Lesson, Inquiry Project, 3D Printing PBL, Project WET, WILD & PLT workshop, Paired Text Set, NSTA Learning Center
Assessment	Gradesheets provided
Praxis test/topic (if applicable)	PLT K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 6	Engage in reflection throughout the course and actively locate professional resources.
Standard	(TPE Standards 1, 7, 9)
Assignment(s)	Learning Log, Science Box, 5E Lesson Plan & Demonstration Lesson, Inquiry Project, 3D Printing PBL, Paired Text Set, NSTA Learning Center
Assessment	Gradesheets provided
Praxis test/topic (if applicable)	ELED: CIA (Science Curriculum, Instruction, and Assessment); Content: (Science); PLT K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 7	Address student common misconceptions in science through the use of formative and summative assessments.
Standard	(TPE Standards 1, 2, 3, 4, 6, 7, 8, 9, 11a)
Assignment(s)	Learning Log, 5E Lesson Plan & Demonstration Lesson, Inquiry Project, NSTA Learning Center
Assessment	Gradesheets provided
Praxis test/topic (if applicable)	ELED: CIA (Science Curriculum, Instruction, and Assessment); Content: (Science); PLT K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 8	Demonstrate the use of materials, media, and technology in learning, teaching, and communicating science content.
Standard	(TPE Standards 1, 2, 3, 4, 5, 6, 7, 8, 11a)
Assignment(s)	Science Box, 5E Lesson Plan & Demonstration Lesson, Inquiry Project, 3D Printing PBL, NSTA Learning Center
Assessment	Gradesheets provided
Praxis test/topic (if applicable)	ELED: CIA (Science Curriculum, Instruction, and Assessment); PLT K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Objective 9	Modify instructional plans to meet the needs of all learners in an inclusive classroom.
Standard	(TPE Standards 1, 2, 3, 4, 5, 6, 7, 8, 9, 11a)
Assignment(s)	Science Box, 5E Lesson Plan & Demonstration Lesson, Inquiry Project, Project WILD & PLT workshop, Paired Text Set
Assessment	Gradesheets provided
Praxis test/topic (if applicable)	ELED: CIA (Science Curriculum, Instruction, and Assessment); Content: (Science); PLT K-6 (Students as Learners, Instructional Process, Assessment, Analysis of Instruction Scenarios)

Grading and Evaluation

Date Due	Assignments	Points Possible	Percentage Of Grade
TBA	3D Printing – Engineering Design	50	10%
Feb. 3	Science Box	75	15%
March 2	Paired Text Set	25	5%
March 30	NSTA Learning Center SciPack	25	5%
March 30	Inquiry Project	75	15%
April 6	Project WILD & Project Learning Tree workshop Assignment	50	10%
April 27	Interactive Notebook	75	15%
April 27	5E Inquiry Lesson Plan & Demonstration Lesson	75	15%
	Professionalism	50	10%
	Total Points	500	100%

Grading Scale

A 93-100%	465-500
B 85-92%	425-464
C 77-84%	385-424
D 69-76%	345-384
F Below 69%	Below 345

The instructor reserves the right to adjust this syllabus with appropriate notice to students.